

### **Amendments to the Claims**

This listing of claims will replace all prior versions, and listings, of claims in the application:

In the claims:

1-51. (Cancelled)

52. (New) A method for producing a population highly enriched for human central nervous system stem cells (CNS-SC) which can initiate neurospheres (NS-IC), comprising:  
selecting from a population containing neural or neural-derived cells for cells that bind to a first antibody selected from the group consisting of monoclonal antibody AC133 and monoclonal antibody 5E12, and further comprising the step of further enriching the population by selecting and eliminating from the population those cells that bind to a second antibody selected from the group consisting of a monoclonal antibody that binds to CD45 antigen and a monoclonal antibody that binds to CD34 antigen, such that those cells that are AC133<sup>+</sup>CD45<sup>-</sup> or AC133<sup>+</sup>CD34<sup>-</sup> or 5E12<sup>+</sup>CD45<sup>-</sup> or 5E12<sup>+</sup>CD34<sup>-</sup> are selected.
53. (New) The method of claim 52, wherein said first antibody is monoclonal antibody AC133.
54. (New) The method of claim 52, wherein said first antibody is monoclonal antibody 5E12.
55. (New) The method of claim 52, wherein said second antibody is a monoclonal antibody that binds to CD45 antigen.
56. (New) The method of claim 52, wherein said second antibody is monoclonal antibody that binds to CD34 antigen.
57. (New) A method for producing a population highly enriched for human central nervous system stem cells (CNS-SC) which can initiate neurospheres (NS-IC), comprising:

selecting from a population containing neural or neural-derived cells for cells that bind to monoclonal antibody AC133 and monoclonal 5E12, and further comprising the step of further enriching the population by selecting and eliminating from the population those cells that bind to a monoclonal antibody that binds to CD45 antigen or monoclonal antibody that binds to CD34 antigen, such that those cells that are AC133<sup>+</sup>5E12<sup>+</sup>CD45<sup>-</sup> or AC133<sup>+</sup>5E12<sup>+</sup>CD34<sup>-</sup> are selected.

58. (New) A method for producing a population highly enriched for human central nervous system stem cells (CNS-SC) which can initiate neurospheres (NS-IC), comprising:

selecting from a population containing neural or neural-derived cells for cells that bind to monoclonal antibody AC133 or monoclonal 5E12, and further comprising the step of further enriching the population by selecting and eliminating from the population those cells that bind to a monoclonal antibody that binds to CD45 antigen and a monoclonal antibody that binds to CD34 antigen, such that those cells that are AC133<sup>+</sup>CD45<sup>-</sup>CD34<sup>-</sup> or 5E12<sup>+</sup>CD45<sup>-</sup>CD34<sup>-</sup> are selected.

59. (New) A method for producing a population highly enriched for human central nervous system stem cells (CNS-SC) which can initiate neurospheres (NS-IC), comprising:

selecting from a population containing neural or neural-derived cells for cells that bind to monoclonal antibody AC133 and to monoclonal antibody 5E12, and further comprising the step of further enriching the population by selecting and eliminating from the population those cells that bind to a monoclonal antibody that binds to CD45 antigen and a monoclonal antibody that binds to CD34 antigen, such that those cells that are AC133<sup>+</sup>5E12<sup>+</sup>CD45<sup>-</sup>CD34<sup>-</sup> are selected.

60. (New) The method of any one of claims 52, 57, 58, or 59, further comprising the steps of: further enriching the population by selecting and eliminating from the population those cells that bind to monoclonal antibody 8G1.

61. (New) The method of any one of claims 52, 57, 58, 59, or 60, wherein said antibodies are fluorochrome conjugated.

62. (New) The method of any one of claims 52, 57, 58, 59, or 60, wherein said antibodies are conjugated to magnetic particles.
63. (New) The method of any one of claims 52, 57, 58, 59, or 60, wherein the selecting is by flow cytometry.
64. (New) The method of any one of claims 52, 57, 58, 59, or 60, wherein the selecting is by fluorescence activated cell sorting or high gradient magnetic selection.
65. (New) The method of any one of claims 52, 57, 58, 59, or 60, wherein the population containing neural or neural-derived cells is obtained from any tissue which gives rise to neural tissue.
66. (New) The method of any one of claims 52, 57, 58, 59, or 60, wherein the population containing neural or neural-derived cells is obtained from neural tissue.
67. (New) The method of any one of claims 52, 57, 58, 59, or 60, wherein the population containing neural or neural-derived cells is dissociated from neural tissue.
68. (New) The method of any one of claims 52, 57, 58, 59, or 60, wherein the population containing neural or neural-derived cells is derived from a fetal brain, adult brain, fetal spinal cord or adult spinal cord.
69. (New) The method of any one of claims 52, 57, 58, 59, or 60, wherein the population containing neural or neural-derived cells is obtained from a neural cell culture.
70. (New) The method of claim 69, wherein the population containing neural or neural-derived cells is obtained from a neurosphere culture or an adherent monolayer culture.

71. (New) A method for producing a population enriched for human central nervous system stem cells (CNS-SC) which can initiate neurospheres (NS-IC), comprising selecting from a population of neural or neural-derived cells for cells that are AC133<sup>+</sup>, 5E12<sup>+</sup>, or AC133<sup>+</sup>5E12<sup>+</sup>, and further comprising the step of further enriching the population by selecting and eliminating from the population those cells that are CD45<sup>+</sup>, CD34<sup>+</sup>, or CD45<sup>+</sup>CD34<sup>+</sup>.
72. (New) The method of claim 71, further comprising the step of further enriching the population by selecting and eliminating from the population those cells that are 8G1<sup>+</sup>.
73. (New) A method for isolating a neurosphere initiating stem cell (NS-IC), comprising:
- a) combining a population comprising neural cells or neural-derived cells containing a fraction of NS-ICs with monoclonal antibody AC133 or monoclonal antibody 5E12 or both;
  - b) selecting AC133<sup>+</sup>, 5E12<sup>+</sup>, or AC133<sup>+</sup>5E12<sup>+</sup> cells, wherein the selected cells are enriched in the fraction of NS-ICs as compared with the population of neural cells;
  - c) combining said enriched fraction obtained in step b) with a monoclonal antibody that binds to CD45 antigen or a monoclonal antibody that binds to CD34 antigen or both;
  - d) selecting and eliminating CD45<sup>+</sup>, CD34<sup>+</sup>, or CD45<sup>+</sup>CD34<sup>+</sup> cells, wherein the remaining cells are further enriched in the fraction of NS-ICs as compared with the enriched fraction obtained in step b);
  - e) introducing at least one AC133<sup>+</sup> or 5E12<sup>+</sup> or CD45<sup>-</sup> or CD34<sup>-</sup> cell to a culture medium capable of supporting the growth of NS-IC; and
  - f) proliferating the AC133<sup>+</sup> or 5E12<sup>+</sup> or CD45<sup>-</sup> or CD34<sup>-</sup> cell in the culture medium.
74. (New) The method of claim 73, wherein the culture medium capable of supporting the growth of NS-IC comprises a growth factor selected from the group consisting of leukocyte inhibitory factor (LIF), epidermal growth factor (EGF), basic fibroblast growth factor (FGF-2) and combinations thereof.
75. (New) The method of claim 73, wherein the culture medium capable of supporting the growth of NS-IC further comprises a neural survival factor (NSF).